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EXPLANATION OF TEXT-FIGURES

- Text-fig. 1. Mosquito-curtain used in the river Halda, Chittagong, for collection of eggs.
 Text-fig. 2. Sketch map of a portion of the Halda showing spawn collection area.
 Text-fig. 3. A typical arrangement of *hapas* in Chittagong.
 Text-fig. 4. 'Chang', used for embryonic development.
 Text-fig. 5. A double cloth tank, used for experiments in the Halda.

WILD LIFE PRESERVATION:

INDIA'S VANISHING ASSET

BY

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This contribution to the *Journal* of the Society was in course of preparation when there appeared in the 'Madras Mail' newspaper of 6th January 1948 an article by Mr. D. Dorai Rajan under the caption, 'Preserve India's Wild Life—an appeal for Government action.'

It is well that the first ventilation of this urgently important subject in the public press since the 15th August 1947 should have been put forward by a national of the new India.

Mr. Rajan's plea deals with South India only, so a similar plea with regard to both the dominions into which this sub-continent has been recently divided is now placed before the members of the Bombay Natural History Society—which has been for many years in actual fact an All-India Society—and the readers of the *Journal*, and through them to the public at large, the Governments of India and of Pakistan; all the Provincial Governments and rulers of States, and all owners of land.

THE BOMBAY NATURAL HISTORY SOCIETY

For many years the Society, through the medium of its *Journal* and other attractive publications, has endeavoured to create and stimulate in India an interest in the wild life of the country. During the past sixty years there have appeared in the *Journal* upwards of fifty longer and shorter articles and editorials on the subject. It was to a great extent owing to the Society that Act XX of 1887, 'An Act for the Preservation of Wild Birds and Game' (passed after nearly 30 years' agitation in the matter), was replaced by 'The Wild Birds and Animals Protection Act (VIII of 1912) which, together with the Indian Forest Act (XIV of 1927) is the basis of all rules in force at the present time.

PRINCIPLES

In all civilized countries there is a general recognition of the need for concerted and practical measures to stop the forces of destruction which threaten wild life in all parts of the world. The principle is the same everywhere, the methods to be employed must vary in every country, and will also vary in different parts of the same country. That has special application to India as a whole, and is the reason why legislation on wild life in this country has been complex and difficult.

'Until it is recognized that Wild Life is a valuable natural resource, and the benefits derived from an unguarded resource are wasting benefits, waste will continue until the resource has gone and the benefits have vanished. No natural resource is more sensitive to conservation than Wild Life, and no natural resource has suffered more from lack of conservation. During the last sixty years species have been exterminated due to this deficiency.' (Hubback).

At the present time the pace and extent of the waste is alarming. In this country there is the gravest need for concerted action.

'In its fauna and flora nature has endowed India with a magnificent asset. A further interest attaches to our wild life from its association with the folk-lore and legendary beliefs of the country. It is an interest not confined to India alone, but which has spread among men of culture everywhere because of the esteem and admiration in which her sacred books and writings are held.' (Prater).

BIRDS

Although birds are not now persecuted to the same extent as animals, yet an enormous amount of unnecessary and preventible damage is going on. One bright spot in India, as Champion has remarked, is that non-game birds are not harried to the same extent as used to be the case in some western countries, for the Indian boy does not amuse himself by uselessly collecting vast numbers of birds' eggs. But India had the dreadful plumage trade, which was far worse.

The Great Indian Bustard is becoming increasingly scarce and has gone from areas where it was common not many years ago. The Monal Pheasant and the Tragopan of the Himalayas have been saved only through prohibition of export of plumage. Other birds saved from what would have practically become extermination through the extremely lucrative plumage trade were peacocks and black partridges, egrets, jungle-cocks, paddy-birds, kingfishers, jays and rollers, orioles and a host of others. The governments controlling Pondicherry, Goa and other ports on the coasts of India co-operated, so the traffic was stopped. But there were many subsequent cases of smuggling, and these will certainly recur if the plumage trade measures are ever relaxed.

All interested in bird life should take warning through perusal of Mr. Dodsworth's illuminating article. (17)

Now that Burma is separated from India it behoves the governments through their Customs Departments to be increasingly vigilant, not only at all the ports but through the post offices and along the land frontiers also.

NOMADIC TRIBES

In all tracts where the snaring and netting of ground game is the hereditary occupation of various nomadic tribes partridges, quail, florican, hares are fast disappearing. These people, expert in their calling for untold generations, sweep the country as a broom sweeps the floor; nothing is passed over, nothing is spared.

The time has long past when snarers of indigenous game birds should be allowed to continue to earn a livelihood in that way; in any case all markets should be denied them, and public opinion should recognize that flesh of such wild creatures is not in these days at all necessary for human existence and should ban the killing of them for food alone. Properly regulated sport may be allowed during the seasons prescribed by local governments in respect of each species.

Within a considerable distance also of Calcutta, Bombay, Madras and other large places markets are supplied in season and out of season through other agencies and local 'shikaris' in spite of the local government close season rules under Act VIII of 1912.

Even if legislation on lines suggested in this article is effected, however much it can and may help in the endeavour to protect wild life, anything like *practical* success is possible only if there is a strong Public Opinion co-operating with the governments. That cannot be too often reiterated.

Value of Birds.

In connexion with all that is written above the thought-provoking article, 'Bird Protection in India: Why it is necessary and How it should be controlled,' by Sálím A. Ali, M.B.O.U., contributed in 1933 to the U.P. Association should be read by all governing bodies. Indeed it is most essential to national India that bird life should be adequately conserved. For 'Quite apart from a sentimental value, birds render incalculable service to man. Without their protection our crops, our orchards, our food supply would be devoured by hordes of ravaging insects. Birds are the principal agency that controls the bewildering multiplication of insect life which, if unchecked, would overwhelm all life on this planet.' (Prater).

SPECIES IN DANGER

Mammals: The Great One-horned Rhinoceros has only been saved by special measures and these, if in any way relaxed, will inevitably lead to its extinction. A close relative to the above the Lesser One-horned Rhinoceros (*sondaicus*), which has been within the memory of many an inhabitant of the Sunderbans jungles and other tracts, has completely disappeared—none now exist on the soil of India. The Asiatic Two-horned Rhinoceros which occurred in parts of Assam has gone from there for ever, and both these species are approaching the vanishing point in Burma and other countries where they were formerly in fair number. In Burma the Thamin Deer is probably doomed to extinction.

In Western Pakistan and neighbouring mountains the Straight-horned Markhor is rapidly disappearing; and if the Punjab Urial is not carefully preserved that species will not long survive.

The Indian Antelope (Black Buck) is becoming increasingly scarce and will eventually only be preserved through protection; to a less extent the same can be said of the Indian Gazelle. The Cheetah or Hunting Leopard, was not uncommon in the central parts of the peninsula but is now practically extinct in a wild state. The Wild Buffalo has almost gone from the areas east of the Godavari river where it was common not long ago; and it needs continued protection in Assam. The Asiatic Lion in India has only survived in its last stronghold through protection in the Gir Forest of the Junagadh State in Kathiawar.

'In many districts the larger animals have been totally wiped out. In others, where they were once common, they are now hopelessly depleted. There are a few parts of India where the position of wild life is to some extent satisfactory, though insecure. Equally there are extensive areas where conditions are so appalling that, if left unchecked, they must lead to the complete destruction of all the larger wild creatures which live in them.' (Prater.)

Year in year out there is terrible destruction throughout the enormous tract of mostly hilly and forested country comprising the Eastern States, from the Godavari river as far as Bengal, some of which are being now merged into India. The methods of the aboriginal tribes inhabiting this huge area (and other parts of India also) are those of extinction, for they net, snare, shoot all edible living creatures at all possible seasons and particularly during the hot weather months when water at the few pools is a necessity to all and renders them an easy prey.

In the Himalayan mountains also where control is difficult wild animals are definitely decreasing, and only to be found in any number in the more inaccessible places.

TIME FOR DECISION

The Governments have to decide without delay if wild life is to be effectually preserved or the present lamentable state of affairs allowed to continue. In the latter event there can be but one result—the total and irreplaceable extinction of some forms of wild life, with everywhere woeful reduction in number of all wild animals and many species of birds.

There is no middle course. Half measures will be futile and waste of time. Wild life is a national and natural asset which, if it is ever lost, can never be replaced. It is necessary that governments should give a lead, a strong and unambiguous lead.

India and Pakistan should be proud to stand side by side with other civilized countries of the world in saving their fauna from extinction.

In these days public opinion should recognize that flesh of wild animals is not necessary to human existence; but public opinion may not eventuate for many a long day. Meat-eaters want something for nothing and care not how they get it. Posterity means nothing to them.

One instance. In November 1947 six shot carcasses of chital hinds were found with a man in a country bazaar in a British district. Police said prosecution doubtful because no evidence as to where the animals were killed. But a so-called 'Sanctuary' was not far distant. Burden of proof should be on the possessor. In any case Rules under Act VIII of 1912 must have been contravened and conviction could have been had.

Legislation, and that very speedily, should absolutely prohibit offering for sale, possession for sale, or marketing in any way the hides, horns, flesh or any other part of any indigenous wild animal throughout the year. And, as was done by Notification in 1902 to suppress the plumage trade, so also should the trade in products of wild animals be stopped by prohibition of export by sea, and by land now that Burma is independent of India.

It would appear that there is no possible objection on religious or other grounds to a general law throughout the whole country to the above effect. Profits are large and really deterrent sentences would be necessary.

Public Opinion

At the present time public opinion as to wild life preservation is almost non-existent in this country. It is only through public opinion that wild life can be saved and preserved through all the future years.

Hear a great statesman of former days in another land:—

'In proportion as the structure of a Government gives force to public opinion, it is essential that public opinion should be enlightened.' (George Washington)

In these days that is done through the many avenues of propaganda.

Propaganda

Political parties in this country have been able to rapidly rouse and educate public opinion in all kinds of political matters. Is it not therefore possible that through like efforts the thoughts of the people can be directed towards the necessity of the conservation of this national asset of wild life? It *can* be done. Great are the powers of propaganda.

Let the secular and religious leaders of the people lend their great influence and abundant powers of persuasion to furtherance of this most pressing need. Where there are religious influences at work wild life is sacrosanct. All of us know that. We see it everywhere: peafowl, parrots, pigeons, monkeys, nilgai and other species—fish in sacred river pools. Even where some of these creatures cause much loss and damage to growing crops and to gathered grain they are protected through religion.

Where the rulers of States have made their wishes known and enforced, wonderful are the results. Instances are known to those having this subject at heart; a number are known to the writer.

ENEMIES TO WILD LIFE PRESERVATION :

FORGETFULNESS—INDIFFERENCE—IGNORANCE—GREED FOR GAIN

Laws are enacted, rules are made and forgotten, for there is no continuity of official enforcement and no public opinion to keep them in mind.

India

Within not many years Act VIII of 1912 was forgotten, the wide scope of its provisions unknown. The rules under the Act were ignored and its provisions a dead letter.

1933. 'The Governor in Council has reason to believe that there has been little improvement in the administration of this Act and that subordinate officials are, not infrequently, offenders against its provisions, × × × × it is believed that sheer ignorance of close seasons is in many cases the cause of offences against the Act'....

Ceylon

Notwithstanding a much interested and powerful Game and Fauna Protection Society, the many difficulties of which are related in Vol. 35, pp. 666 et seq, it has not been possible to effectually preserve wild life. The Annual Report for the 54th Season states:— 'Poaching is undoubtedly on the increase, and in some areas wholesale destruction goes on.' And that is after 54 years of endeavour to save the fauna of the island for posterity!

How could it be otherwise? In 1907 the reply of the Ceylon Government to urgent representations of the Society for effective action elicited the reply, 'Our Game Laws are quite efficient, but we regret we have not the power to enforce them.' It would seem that the same answer would have to be given to-day.

Up to now the position in India has been similar to that. 'The laws and rules are well framed but are not sufficiently enforced,' (Editors). It cannot be too often asserted, 'Existing laws and rules are excellent in themselves but it is in the efficient application of them the trouble arises.' (Editors)

Guns and Greed

Apart from genuine sportsmen, it is the possessors of guns and rifles who do the greatest amount of harm. In many cases it is not the actual licensee who does the damage, but the illegal habit of lending or hiring out the weapon to others. Could the abuse of license granted as a personal privilege be stopped much good would result. But how is this to be done? Only through public opinion could it be effectually curtailed. So what? Suggestions as to Arms Act, if carried out, would do some good.

It is as a poacher that man is the great destroyer; and the main incentive is profit by selling hides, horns, meat—to a less degree, is it meat only. In some places local dealers finance the village shikari, providing him with guns and ammunition in exchange for hides, etc. Sambar and chital hides and heads are openly bought and sold in many bazaars and there is nothing to prevent it. Sale of trophies is common in many large towns and cities. To deprive sellers of their

markets by effectively enforced legislation and through public opinion is the only way to remove temptation to kill for profit. If there were no buyers there could be no sellers. Utopia!

CROP PROTECTION

It has always been pointed out, and is notorious, that crop protection and other weapons are used for the slaughter of game animals in adjacent and further forests regardless of all laws, rules, age, sex, season, or any other consideration whatever than profit. All this and other poaching is mostly carried on in Government forests, for there are to be found more animals than outside them.

So far as crop protection goes the argument in the mind of the cultivator is that if there are no animals the crops will not be eaten, so he may as well hasten the coming of the welcome day and meanwhile make money for himself and provide meat to the community.

Guns :

The great increase over former years in the number of licenced guns is producing its inevitable adverse effect; and there is the mass of unlicenced weapons carefully concealed and constantly used. While the reduction in the number of weapons is admittedly a difficult matter—the withdrawal of crop protection guns during the seasons when the crops are off the ground and the guns not needed for legitimate use is a reasonable proposition. That would be of much benefit as those are the months in which they do the most harm.

A suggestion from Assam was that crop protection guns now owned by villagers (more especially those inside Government forests) might be acquired by Government for temporary issue at the right time and withdrawal when no crops, or for other reason.

It is not likely, however, that Provincial Governments would adopt these gun withdrawal suggestions on account of practical difficulties and extra work to District Magistrates and other officials.

A proposal advocated by many is that crop-protection weapons should be licenced for cut-short barrels only. Cogent arguments against such modified weapons are that they are more liable to be loaded with buckshot, so causing many animals to be wounded and lost; are dangerous in hands of such persons as ordinary cultivators; and such restriction would cause an increase of concealed weapons for poaching.

It has been demonstrated in South India by Colonel R. C. Morris that bamboo-tube rocket-firing 'guns' are both cheap and effective for scaring crop-raiding wild elephants, so firearms need not be used against them by cultivators.

Such 'guns' could also be effectually used in many forest areas against other crop-raiding animals and so enable a large reduction in the number of guns now licenced for ostensible crop protection.

THE ARMS ACT

Some suggestions.

Firearms licences are issued for:—

(1) *Sport*. These should be breech-loaders, and in case of rifles may be magazine weapons. Automatic weapons and muzzle-

loaders should not be licensed for sport. The former lead to indiscriminate firing, the latter to cruelty through use of buckshot, bits of iron, old nails &c.

(2) *Crop and cattle protection.* These should be smoothbore guns only; and being by law available at holder's residence only, due care on part of licensing officer can limit use of the weapon to *within village boundaries only*. These are surveyed and marked in forest maps so above entry would have effect of a conviction where otherwise a loophole might exist. Perusal of an annotated edition of Arms Act and Rules is illuminating as to number of avenues for escape of the wrong-doer under all categories.

(3) *Personal protection.* The only weapons allowed, unless the license is for sport also, should be revolver or pistol. A rifle or shotgun is easily robbed and just as easily turned against the possessor.

(4) *Display.* This meaning 'show with ostentation' such weapons only as are non-lethal should be licensed for this purpose.

In all cases license should be plainly crossed with words 'Sport only' or 'Personal protection only' etc., as the case may be.

Licenses for possession of smoothbore guns are ordinarily issued on application and without previous enquiry. Other licenses are issued to persons of approved character and status, this latter being as may be prescribed by the Local Government.

Were the foregoing suggestions adopted there would be no real hardship to anyone, and wild life might greatly benefit.

AGRICULTURE AND WILD LIFE

For purposes of wild life conservation lands may be classified in five main categories:—*Urban—Agricultural—Waste—Private—Forest.*

Urban Lands.

In these, measures should be taken for the protection of all birds. Areas actually under the control of municipalities or local boards could with advantage be constituted bird sanctuaries where the killing of, or taking the eggs of, any wild bird should be forbidden. The necessary machinery is at hand in Act VIII of 1912, relevant sections of which are here given for use with this and other parts of this contribution.

Whereas it is expedient

1. (1) This Act may be called the Wild Birds and Animals Protection Act 1912; and
- (2) It extends to the whole of British India, including British Baluchistan, the Sonthal Parganas and the Pargana of Spiti.
2. (1) This Act applies, in the first instance, to the birds and animals specified in the Schedule when in their wild state.
- (2) The Local Government may, by notification in the local official *Gazette*, apply the provisions of this Act to any kind of wild bird or animal other than those specified in the Schedule which, in its opinion, it is desirable to protect or preserve.

3. The Local Government may, by a notification in the local official *Gazette*, declare the whole year or any part thereof to be a close time throughout the whole or any part of its territories for any kind of wild bird or animal to which this Act applies, or for female or immature wild birds or animals of such kind; and subject to the provisions hereinafter contained, during such close time, and within the areas specified in such notification, it shall be unlawful

- (a) to capture any such bird or animal, or to kill any such bird or animal which has not been captured before the commencement of such close time;
- (b) to sell or buy, or offer to sell or buy, or to possess any such bird or animal which has been captured or killed during such close time, or the flesh thereof;
- (c) if any plumage has been taken from such bird captured or killed during such close time, to sell or buy or to offer to sell or buy, or to possess such plumage.

4, 5, 6, 7. Penal and other provisions.

8. Nothing in this Act shall be deemed to apply to the capture or killing of a wild animal by any person in defence of himself or any other person, or to the capture or killing of any wild bird or animal in *bona fide* defence of property.

9. Repeals Act XX of 1887.

The Schedule

- (1) Bustards, ducks, floricans, jungle fowl, partridges, peafowl, pheasants, pigeons, quail, sandgrouse, painted snipe, spurfowl, woodcock, herons, egrets, rollers and kingfishers.
- (2) Antelopes, asses, bison, buffaloes, deer, gazelles, goats, hares, oxen, rhinoceros and sheep.

In 1915 (vol. 24 p. 382) it was pointed out that the practice of taking the eggs of sitting pheasants and partridges is becoming increasingly common and to this malpractice the Act provides no safeguard. That suggestion has not been followed. To the above may now be added that it is a common practice to rob for food the eggs of indigenous wildfowl—the Spot-bill Duck and the Cotton Teal.

The suggested amendment to section 3 was addition of a clause regarding eggs and nests. This suggestion is now again brought to notice as desirable.

‘ To take or possess, to sell or buy, or offer to sell or buy, an egg or eggs or nest of any such bird ’.

Agricultural Lands.

Here lies the clash between the interests of Man and Animal; for which there are two main reasons.

Firstly, the population of the country is increasing by about five millions yearly, so the areas under cultivation are extending, and must continually extend to the utmost limit, which means the continual absorption of all cultivable waste lands and secondary forest lands.

Secondly there is the imperative need of protecting present and future cultivated lands from wild animals.

In some parts, where cultivation is contiguous to or near Reserved forests the depredations of wild animals present one of the most serious handicaps the cultivator has to face. The animals are not only deer and pig and some species of birds, but nilgai, monkeys and parrots which are protected by religious beliefs.

‘Human progress must continue, and in the clash of interests between Man and the Animals human effort must not suffer. But this problem has been faced by other countries. Cannot a reasonable effort be made to face it in our own? That an intensive development of the agricultural resources of a country may accompany a sane and adequate policy for the conservation of its wild life is shown by the measures taken to this end by all progressive countries.’ (Prater)

But in those countries there is universal literacy, a people easily educated to a proper public opinion, and where the masses do not clamour for possession of guns and rifles and even for repeal of the Arms Act.

Waste Lands.

These are beyond redemption as to wild life, and in any case all that are at all cultivable will soon be merged with Agricultural lands.

Private Lands.

The general consensus of opinion is that in most ordinary tracts the position is hopeless. The people have been educated to destroy, and there is no agency to stop it. Only through the owners themselves and through propaganda can any change be wrought: and before these operate the position is likely to be beyond any remedy.

Some private lands, however, have forests for which rules have been framed to regulate hunting and shooting, while in others no rules have been framed. The wild life situation in all these depends on the amount of control exercised by the landowners. Some United Provinces landowners maintain renowned Swamp Deer preserves.

The Wild Birds and Animals Protection Act, 1912, deals with the right of private owners only in so far as it prohibits the shooting of the specified animals whether on private lands or elsewhere. This prohibits private owners killing females of deer, etc., and killing during prescribed close seasons.

Government Forests.

These are of several kinds and mostly under the Forest Department, but some are under Revenue Department; none of the latter are Reserved Forests.

While it is essential that the cultivator should have reasonable latitude to defend his property, it is equally essential that there should be certain areas of Reserved Forests, where the laws and rules for protection of wild life are, or should be, rigidly enforced.

State-owned Reserved Forests, similar forests in the Indian states in the Terai tracts of the frontier states of Nepal, Sikkim, Blutan and some private forests are now, and must continue in future to remain the natural sanctuaries for wild life in this country.

That purpose they would adequately fulfil as regards most of the species in the Schedule were they *adequately guarded*. That is the crux of the whole problem. And with that is linked the proper enforcement of the relevant laws and rules governing the possession and use of firearms and the control of legitimate sport.

Legitimate Sport

Shooting rules and license conditions for Reserved Forests as at present framed for the several provinces and districts, also for some of the larger states, are good and well adapted to local conditions. They provide against all conditions, all malpractices, including the motor vehicle and use of torch against deer.

Licence fees are on the whole rather cheap; and where the Shooting Block system does not obtain, and District or Forest Division licenses are issued for a whole year on payment of a very small fee, the introduction of the Block System would cause a larger number of sportsmen to visit the forests. This is productive of much good, for when right-thinking sportsmen are in the forests, poaching is held in check for the time being; and the sportsman can (or should) report such malpractices as come to his notice.

The short term license system also enables the controlling officer to regulate the number of species, whether deer, etc. or carnivora, for each block in his Division. Such control preserves the balance of Nature and aids efficient protection.

Where a change is necessary is the adoption everywhere of the Assam arrangement by which the sportsman has to pay a fixed royalty for each animal shot by him under his license. The system makes sportsmen more careful as to animals they shoot at, and aids needed funds for a Wild Life Department.

Wild Life and/or Game Associations

Where these exist they are, if well organized and conducted, wholly productive of good. There is the Association for the Preservation of Game in the United Provinces through which the All-India Conference for the Protection of Wild Life was held at Delhi in January 1935 and the Hailey National Park established in the Kalagarh Forest Division. At the Conference it was declared that, "Indian Wild Life could only be saved by Public Opinion, and that legislation, however efficient, could do little in matters like these without the whole-hearted support of the Public." How true. Where is the Public Opinion? Where is the support of the public? What is the state of wild life at this thirteen years later date?

In Northern Bengal are three shooting and fishing associations:—

- (1) Darjeeling Fishing and Shooting Association.
- (2) Tista-Torsa Game and Fishing Association.
- (3) Torsa-Sankor Game and Fishing Association.

In Madras is the 69 years old Nilgiri Game Association but for which little wild life would now exist in that district. Continuity of purpose, efficient control.

In 1933 an Association for the Preservation of Wild Life in South India was inaugurated at Madras by the then Governor of the

Presidency, but it came to nothing and has never been heard of since then. Continuity of Purpose—Public Opinion these basic essentials do not exist. Without them there can be no effectual preservation of wild life for posterity.

NATURAL ENEMIES OF WILD LIFE

Tigers. Where in forest areas deer have been excessively reduced in number through poaching the tiger turns increased attention to cattle killing. The tiger needs the pursuit of deer to satisfy his hunting instincts, and where the balance of nature in this respect is not unduly disturbed he is of benefit, as also the panther, to the cultivator of land within the forests and along its borders, for he keeps the deer and wild pig population within natural limits. But where the stock of deer is unduly reduced not only are all the deer killed out but the tiger is forced to prey on cattle; and as these are penned at night he is compelled to change his habits and hunt by day. That is when he takes great toll of grazing cattle and sometimes turns against the people also. Then the cultivators clamour for protection from the menace brought about by the unlawful poaching done by themselves and others.

Panthers. These are less destructive to village cattle as they prey on sounders of pig and a variety of smaller animals ordinarily ignored by the tiger; but they also kill cattle and other domestic stock to a greater extent when the balance of nature has been disturbed. In areas where panthers have been unduly reduced through rewards for their destruction there has resulted such an increase of wild pig as to necessitate rewards to reduce their number.

Even predatory animals (not wild dogs) have a distinct value as a controlling influence against over-population by species whose unrestricted increase would adversely affect the interests of man.

The balance of nature cannot be unduly disturbed with impunity.

Wild Dogs. These are wholly destructive of game animals and can be given no mercy. Rewards should not exceed Rs 15/- for a larger sum induces frauds of several kinds. Disbursing officers should have by them skins and skulls by which to check those produced; and skins for reward must have tails and skulls attached and these be effectively destroyed when reward paid.

Best methods for reducing wild dog population are through digging out breeding lairs, and strychnine poisoning of carcasses by instructed persons.

Crocodiles. In the jungles of India the crocodile is not the menace to human life that he is in Borneo, Sumatra, etc., and Africa. But where there are dry-season jungle pools in reserved and other forests crocodiles do an enormous amount of damage to all creatures, deer especially, which are forced to drink at those places.

It should be the duty of the Wild Life Department to destroy as many of them as possible. Visiting sportsmen should also give help in the matter.

UNNATURAL ENEMIES

Cattle diseases. A great cause of much periodical mortality to buffalo and bison is through rinderpest. Against the introduction of this by grazing cattle effective action has been found impossible.

CROP ENEMIES

Elephants. Effective legislation was enacted in 1873 and 1879 to protect the elephant. In these days of mechanical haulage the preservation of these animals is not necessary in such large number as formerly. In some areas it is now very definitely necessary that regulated thinning out of herds and crop protection methods be initiated to protect landowners and cultivators from the great damage they suffer. This should be done by the suggested Wild Life Department on systems to meet local conditions.

There is also the need to have proclaimed rogues speedily dealt with. In most cases these animals have become dangerous because cultivators wound them by use of inadequate weapons. Local sportsmen may or may not be available to quickly deal with these beasts with consequence of further delay and more loss of life and property.

Where elephants have to be thinned out or killed the Wild Life Department's specially recruited and trained set of men—6 to 8 for each Province needing them—armed with Government rifles and controlled by the Provincial Warden can be directed to the area. They would also deal with proclaimed carnivora.

It can be anticipated that the demand for elephants in India will before long be reduced to the few needed for timber extraction in difficult areas, for riding and transport duties by the Forest and Wild Life Departments, for ceremonial purposes, for ivory, and for zoological purposes.

Therefore it can be reasonably said that elephant herds in some areas—Southern Circle, Bombay, North Coimbatore, Kollegal and the Wynaad for instance—could be reduced to a minimum; and herds in parts of Bengal, Assam, Orissa, in places where they may be greatly oppressing the cultivators could be also thinned out.

These suggested operations would not in any way endanger the continuance of the species.

Wild Pigs. Deer and the like are crop raiders, but it is the wild pig which is the principal crop destroyer both in the open country, adjacent to the forests and within the forests. Where the balance of nature has not been disturbed the larger carnivores take care of the surplus pig population harbouring in the forests. It is not by the lone-working cultivator with his gun that any impression is made on the number of pig.

Some 25 years ago it was realized by the Bombay Government that damage to crops by wild pig amounted to crores of rupees. Measures to deal with the trouble outside reserved forests included clearance of cactus and thorn thickets and other such coverts together with organization of inter-village pig drives. Those measures will have had good results if continued as a fixed policy, but not otherwise.

At the time of writing (end of January 1948) the Government of India have been asked by the Government of the Central Provinces to supply arms and ammunition for use of cultivators against wild pig.

If the weapons are used against pig only, and at organized drives only, good may result, but if not so controlled they will assuredly be turned against the fast dwindling wild life.

NATIONAL PARKS

Those who have knowledge of the subject are of opinion that India is not yet ready for these. The Hailey National Park, the situation of which conforms in most respects to conditions laid down for a sanctuary (Smith) is specially situated and may be a success. A full account of it would be welcomed by members of the Society.

The Banjar Valley Reserved Forests area in the Central Provinces is perhaps suited for eventual status of a National Sanctuary (not Park). The case for it is outlined by Dunbar Brander. Buffalo, lost to it not many years ago could be re-introduced; otherwise it contains all the wild animals of the plains except elephant, lion, and gazelle. Elephants are not wanted as there are plenty in other provinces.

Even fifteen years ago the area was admittedly tremendously poached.

SANCTUARIES

All sportsmen are agreed that these are of little use unless adequately guarded and, as that has not yet been found possible in India, such areas merely become happy hunting grounds for poachers from far and near. The constant presence of sportsmen of the right kind has been found the best guarantee for preservation of wild life in Reserved Forests.

There are however, tracts and forests where wise forethought and administration can, with the willing co-operation of the people if that can be obtained, do much to preserve wild life for posterity.

Under the present re-organization of India a number of the smaller States, and many lands privately owned, within which wild life has had no regulated protection, will now be brought within the laws of the rest of the country to the benefit of wild life in all its aspects—if the laws are properly enforced.

The notable contributions on the Problem of Wild Life Preservation by Mr. S. H. Prater, the Society's Curator, on the 10th August 1933, and by forest officers for India, and Smith and Hubback for Burma are of the greatest value and recommended for careful study by all governments in this country.

A WILD LIFE DEPARTMENT

Forest Officers of the regime now ending have been of opinion that animals inside reserved forests should not be removed from the protection of the Forest Department and placed in the charge of a separate department. Their argument has been that the present system has worked well; such action would create resentment and alienate the all-important sympathy of the powerful Forest Department; and that a Game Department would be in no better case than the Forest Department for dealing with breaches of laws and rules.

On the other hand sportsmen and others with many years of experience are of opinion that under the present changed conditions forest officers, while not relieved of all responsibility, should be relieved of their present whole-time onus and share the burden of

preservation of wild life with a specially organized Wild Life Department.

Why should not the two departments work amicably in liaison? There need be no friction. The appointment of Honorary Wardens has not always proved a success, not on account of any disagreements but because the conservation of wild life is a whole time duty which no man with other interests and work to do can efficiently perform. There could be Honorary Wardens to assist the Government Wardens and enthusiasts could be found for that work.

It has not been that all forest officers have been keen on the preservation of the larger game animals; some sylviculturists have expressed definite opinions against any deer being allowed in the forests, but movable fencing has been found a sufficient protection to special plantations.

In these days of intensive exploitation of timber and forest produce the work of forest administration has become more and more exacting and the officers find it exceedingly difficult to give time in office and out of doors to work which brings in no revenue and is considered of subsidiary importance.

Would not Forest Officers welcome the considerable measure of relief which the formation of a Wild Life Department would afford them? Surely they would. Neither their pay nor their prestige would be in any way affected.

It has been experienced that an unbribable staff of Game Watchers has been difficult to procure. That again is strong reason why there should be whole time Wardens whose interest would be to prevent malpractices.

A Wild Life Department means that continuity of purpose without which all endeavour is of no avail.

Money and Funds. The whole question is a matter of money.

Wild Life cannot be effectually conserved without spending money on an organization for the purpose. It is necessary to recognize the fact that there is an intimate connection between the revenue derived from wild life resources and the amount of money that can be spent on conservation.

This is the basis on which the financial policy should be built, together with the recognition that *wild life is a national asset and it is the responsibility and duty of the State to preserve it.* Therefore the fund will need such State grants as may be necessary to make the department effective, more especially in the commencing years.

It should not be possible for funds to be cut off, reduced or abrogated by governments. The Wild Life Fund, as it might be termed, should not be within the control of any Finance Department, Central or Provincial. It should be established by law, kept apart from General Revenues, earmarked for conservation of wild life and protected from any possible raiding of it or interference by the Legislatures.

STAFF

It is useless to build up a staff knowing that its position is insecure and at the whim of some ephemeral office holder.

It would be for the Central Government to decide on the method of establishing the fund, its control, and other measures considered necessary in regard to it.

FUNDS

It is reasonably argued that the considerable revenue accruing to the government, both directly and indirectly, through existence of wild life in this country should be applied to the conservation of the resource or as this contribution has endeavoured to demonstrate, the resource will continue to dwindle and eventually vanish.

Suggested Receipts and Expenditure :—

Receipts.

1. Customs duties—import of sporting arms and ammunition.
2. Licence fees—dealing in sporting arms and ammunition.
3. Licence fees—inland transport of sporting arms and ammunition.
4. Licence fees—possession of sporting arms and renewal of same.
5. Licence fees—Crop-protection weapons.
6. Licence fees—shooting in Government Forests.
7. Licence fees—elephant catching in Government Forests.
8. Royalties on animals shot or wounded in Government Forests.
9. Fines for breaches of shooting rules in Government Forests.
10. Fines, costs, and sums received for compounding of offences against shooting rules.
11. Court fines for offences against wild life laws and/or rules.
12. Receipts on sales confiscated articles.
13. Sales of picked-up tusks, horns, and produce of animals destroyed by departmental Control Staff.
14. Sales of skins of carnivora on which rewards paid.
15. Sales of tusks not allowed to sportsmen in some cases.
16. Licence fees for fishing in Government Forest waters.
17. Any other items accruing, such as donations and/or subscriptions to Wild Life Fund, income on Films produced by the Department and other miscellaneous items.

Expenditure.

1. Salaries and allowances of officers.
2. Do. do. and clothing of staff.
3. Transport of officers and staff.
4. Building and maintenance of Offices.
5. Do. do. of living quarters officers and staff.
6. Purchase and maintenance of weapons and ammunition for animal control.
7. Rewards for destruction of carnivora and other pests.
8. Rewards to Forest Guards.
9. Payments to informers.
10. Court expenses.
11. Stationery and correspondence.
12. Contingencies.

13. Sinking Fund for leave, gratuities and pensions.
14. Improvement of scanty water supplies.

ORGANIZATION

Some suggestions.

The Central Game Fund to be maintained in the office of the Ministry for Agriculture. The Wild Life Department to be linked through the Ministry of Agriculture with the Provincial Agricultural and Forest Departments.

Each Province to have a Provincial Warden, and as many Deputy Wardens as found advisable or necessary. These Wardens to rank with Conservators and Deputy Conservators of Forests respectively, and Game Rangers and Guards with corresponding Forest Department ranks.

Should the idea of a Wild Life Department be considered a suitable committee could work out all details. Recruitment of staff would need to be through careful selection of applicants in all grades; and there would have to be deputation of some of the Provincial Wardens to America and other countries to acquire knowledge of principles, methods, and all useful details.

Propaganda. During the years 1932 to 1936 there was a good deal of wild life propaganda in the public press at the instance of the U.P. Association, also in South India, but all that quickly died down. Then came the war years and now the present difficult times. Wild life has greatly suffered.

Educative propaganda needs constant reminders and exhortations to the public. Only if the subject is frequently repeated will it gain a hearing.

It is commonly said that it will take years and years to arouse public opinion as to wild life. But we daily see what the present leaders of public opinion in this country can do in many ways vitally affecting the present and future lives of the masses, how speedily laws are enacted and far-reaching measures put into motion. There is, for instance, the vast organization for further education of the literates and the initiation of universal literacy for the masses. There seems to be no reason why wild life preservation could not also be given the highest priority. Some of the reforms could wait, not that they should, far from it, but the wild creatures cannot wait—and survive.

Wild life preservation does not only mean the protection of animals and birds, it means a fight against the destruction which is going on at an increasing pace—particularly against deer—and is not of Nature's ordering. It is simply asserting the right to live of the undomesticated animals and indigenous birds.

An atmosphere of mistrust and suspicion is all too common among uneducated people, so the beneficial intentions of measures towards wild life preservation are apt to be misconstrued unless the objects and reasons receive the widest publicity through Government channels, and the newspapers.

The years are passing; this great national asset is wasting away. It is the duty of every government to preserve it for posterity. The urge should come from the highest levels,

PROPAGANDA METHODS

The time is *now*.

The Ministry of Information and Broadcasting could make it a routine matter to keep this subject constantly before all classes of the people. Special talks could be given on All-India Radio, and other systems.

The Educational Department could cause all governing bodies and educational institutions to issue pamphlets, organize lectures, lantern slide talks, and issue of suitable leaflets to all colleges, schools primary schools. All this could be worked out on the lines of the anti-malarial campaign which was an India-wide effort. But it must be a continued effort.

For the literate classes there are the newspapers and other publications as media for propaganda ; and for all classes there is the cinema screen.

Suitable slogans could be devised and shown as a routine matter at commencement and during intervals of all cinema shows, accompanied twice a week by a short talk in regional languages.

In 1944 (14-1-44) the Natural History Society resolved that a popular Nature Magazine be published by the Society, and in 1947 (5-6-47) it was decided that simple natural history booklets be issued in the several languages. The magazine idea was held up during the war years but measures to give effect to both resolutions are now in progress.

Moral support of the Government is essential and financial aid a necessity.

A BRIEF FOR ACTION

1. A decision by the Governments.
2. Issue of a general law to prohibit sale, possession, marketing of meat, hides, horns, etc., of indigenous animals and of birds.
3. Enforcement of Arms Licence rules and conditions.
4. Enforcement of laws and rules under Act VIII of 1912 and Act XIV of 1927.
5. Formation of a Wild Life Department.
6. Propaganda.
7. Generally all possible steps towards saving wild life.

Through the continued efforts of their leaders the peoples of India were roused to political consciousness. Through their long sustained efforts they attained political freedom. Will the leaders and the people not now demonstrate to other civilized nations that they are equally capable of preserving wild life for posterity? Surely they will. Because they should, and because it is demanded for the prestige of India.

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It was the intention of the Society and the writer to submit this pamphlet to Mahatma Gandhi with appeal for his powerful advocacy. Alas! it was not so ordained.

Yet, in view of the late Mahatma's well known sympathy with all things created, it may surely be hoped that the peoples of India and of Pakistan will respond to this appeal in accordance with what would without doubt have been his wishes and his guidance for the preservation of wild life in this country.

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NOTES ON INDIAN BIRDS, I

THE RACES OF *ANTHUS HODGSON*

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In the course of studying Indian collections made by Walter Koelz recently in the Central Provinces and United Provinces of India, and by myself in the Mishmi Hills of North-east Assam, I came upon a number of perplexing specimens of Hodgson's Tree-pipit. In order to attempt to gain some understanding of this difficult species I have assembled over one hundred specimens from the collections of the U.S. National Museum, the American Museum of Natural History, including Dr. Koelz' material, the Academy of Natural Sciences, the Museum of Comparative Zoology and the Peabody Museum of Yale University. I am most grateful to the authorities concerned for the loan of this material and to my friend Dr. Koelz for permission to examine his specimens.

HISTORY OF THE SPECIES

In whatever continent, pipits seem to rank among the more difficult of the species of birds for the systematist or student of distribution to understand. This Asian species is more difficult than most because its breeding biology is little understood, and the confusion attendant on the names assigned to the races is so widespread that it is well-nigh impossible to depend on the existing literature for guidance in identifying the breeding localities of the populations. The migration of this species is also little known and what facts there are